AMENDMENTS TO THE CLAIMS

1. (currently amended) A method for making a cell-matrix construct for use as a heart valve comprising

implanting into an animal a cell-matrix construct consisting of ~~comprising~~

(a) a fibrous matrix in the shape of a heart valve or heart valve leaflet, wherein the matrix is formed of a synthetic, biocompatible, chemically biodegradable polymer, and

(b) ~~having seeded therein~~ cells selected from the group consisting of endothelial cells, myofibroblasts, skeletal muscle cells, vascular smooth muscle cells, myocytes, fibromyoblasts, and ectodermal cells, seeded thereon,

wherein the synthetic chemically biodegradable polymer provides the biomechanical properties of a heart valve or leaflet until the seeded cells can lay down their own extracellular matrix, and

the matrix is formed so that the cells attach to and proliferate on it to the edges of the matrix.

2. (currently amended) The method of claim 1 wherein the matrix is seeded with dissociated connective tissue cells.

3. (previously presented) The method of claim 1 wherein the matrix is first cultured at a first site in a patient prior to being transplanted to a second site.

4. (previously presented) The method of claim 1 wherein the matrix is in the form of a heart valve leaflet.

5. (previously presented) The method of claim 1 wherein the cell-matrix construct is seeded with vascular smooth muscle cells and endothelial cells and implanted to form a heart valve.

6-8. (cancelled)

9. (currently amended) The method of claim 1 wherein the cell-matrix construct is formed of a polymer selected from the group consisting of poly(lactide) (PLA), poly(glycolic acid) (PGA), poly(lactide-co-glycolide) (PLGA), poly(caprolactone), ~~polycarbonates, polyamides,~~ polyanhydrides, polyamino acids, and polyortho esters~~, polyacetals, polycyanoacrylates, and degradable polyurethanes~~.

10. (cancelled)

11. (previously presented) The method of claim 1 wherein the cell-matrix construct contains interconnected pores in the range of between approximately 100 and 300 microns.

12. (previously presented) The method of claim 1 wherein the cell-matrix construct includes growth factors.

13. (previously presented) The method of claim 12 wherein the growth factors are selected from the group consisting of heparin binding growth factor (hbgf), transforming growth factor alpha or beta (TGF), alpha fibroblastic growth factor (FGF), epidermal growth factor (TGF), vascular endothelium growth factor (VEGF), insulin, glucagon, estrogen, nerve growth factor (NGF) and muscle morphogenic factor (MMP).

14. (previously presented) The method of claim 1 wherein the cell-matrix further comprises bioactive factors incorporated to between one and 30% by weight.

15-17. (cancelled)

18. (previously presented) The method of claim 1 wherein the cell-matrix is first cultured in a bioreactor to form a fibrous tissue-polymeric construct before implantation.

19. (previously presented) The method of claim 18 wherein the bioreactor is an animal.